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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/552,423	04/19/2000	Ravishankar Rao	YOR-9-2000-0133-US1	2841

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IBM Corporation
Intellectual Property Law Department
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EXAMINER

KUMAR, SRILAKSHMI K

ART UNIT	PAPER NUMBER
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2675

DATE MAILED: 12/19/2002

7

Please find below and/or attached an Office communication concerning this application or proceeding.



Office Action Summary

Application No.	Applicant(s)	
09/552,423	RAO ET AL.	
Examiner	Art Unit	
Srilakshmi K. Kumar	2675	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 08 October 2002.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-17 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-17 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ 6) ☐ Other: _____

Art Unit: 2675

DETAILED ACTION

Response to Amendment

The following is in response to Amendment A, filed October 8, 2002. Claim 1 has been amended. Applicant has stated in the amendment where all of the limitations of claims 2-9 have been incorporated into independent claim 1. Claims 2-9 have not been cancelled. Examiner is unaware if this has been an oversight. See below for claim objections.

Claim Objections

Claims 2-9 are objected to under 37 CFR 1.75(c), as being of improper dependent form for failing to further limit the subject matter of a previous claim. Applicant is required to cancel the claim(s), or amend the claim(s) to place the claim(s) in proper dependent form, or rewrite the claim(s) in independent form. Applicant has stated in the amendment where all of the limitations of claims 2-9 have been incorporated into independent claim 1. Claims 2-9 have not been cancelled. Appropriate correction is required.

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1-17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tai et al. (US 6,411,745) in view of Ilbery et al (US 6,476,934).

As to independent claim 1, Tai et al disclose a method for transforming a digitized image, said method comprising, providing said image as a plurality of pixels, wherein data for each

Art Unit: 2675

pixel is in a first format (Fig. 1, image into the input scanner, 10, and col. 2, lines 59-63, and col. 3, lines 17-20); and halftoning said data of each of said pixels by employing data from a region of interest which includes at least one pixel following said each of said pixels and producing a second format for said image (Fig. 1, col. 3, lines 6-40).

and further comprising wherein the region of interest includes a plurality of neighboring pixels (Figs. 3-5).

and further comprising wherein the neighboring pixels form a symmetrical pixel array surrounding said each of said pixels (Figs. 3-5).

and further comprising wherein the symmetrical pixel array forms a square (Figs. 3-5).

and further comprising using said second format for an output device (Fig. 1,); Tai et al disclose in Fig. 1 and col. 2, line 59-col. 3, line 16, where an image is scanned into the input scanner (10) and then is manipulated (12), and then rendered (16) for the output device (18).

and further comprising wherein said output device is a printer (col. 3, lines 9-16).

and further comprising determining a dynamic range of pixel values of pixels in an encompassing neighborhood of the region of interest, and wherein the step of halftoning includes making dynamic adjustments depending on the dynamic range of pixel values (Fig. 2, and col. 3, line 41-col. 5, line 4).

and further comprising wherein the step of making dynamic adjustments includes producing a visually pleasing transition between text and picture area in said image (col. 6, lines 3-22).

and further comprising, wherein the step of making dynamic adjustments includes producing a visually pleasing transition includes; if said dynamic range is high, computing a

Art Unit: 2675

pixel data threshold value for said region of interest, comparing each pixel value in said region of interest to said pixel data threshold, if said pixel value is greater than the pixel data threshold value, a first value is placed in the corresponding position of said second format image, if said pixel value is less than or equal to the pixel data threshold value, a second value is placed in the corresponding position of the said second format image;

if said dynamic range is medium, computing a desired number of second values to be placed in said second format image in the region of interest, ordering the pixels in the region of interest according to the ordering of a predetermined halftone array, altering the order of a pixel in said ordering if said pixel has a value which is greater than the value of the next pixel in said order by a predetermined reordering threshold value, repeating said altering of the pixel order until the first and second values chosen for the second format image are no longer changed, choosing said desired number of second values for the second format from the beginning of the said order, and assigning the remaining pixel values in the region of interest to the first value;

if said dynamic range is low, using said predetermined halftone array to compute said first and second values for said second format image, if all the image intensity values in the said ROI are either very high or very low, outputting all said first values or all said second values to the second format image respectively. Tai et al do not disclose the different rules for halftoning. Ilbery et al disclose these different rules in col. 18, lines 63-68, col. 19, lines 1-68, col. 20, lines 1-68, col. 21, lines 1-68. It would have been obvious to one of ordinary skill in the art to combine the systems of Tai et al with that of Ilbery et al as they both disclose a dither system. It is advantageous to use the halftoning system as shown by Ilbery et al, as scanned images which include text and images, would enhance the output and provide a clear grayscale image.

Art Unit: 2675

As to independent claim 14, a method for halftoning at least a portion of an image, the method comprising employing a first rule of halftoning and a second rule of halftoning. Tai et al does not state the first and second rules of halftoning. Ilbery et al disclose these different rules in col. 18, lines 63-68, col. 19, lines 1-68, col. 20, lines 1-68, col. 21, lines 1-68. It would have been obvious to one of ordinary skill in the art to combine the systems of Tai et al with that of Ilbery et al as they both disclose a dither system. It is advantageous to use the halftoning system as shown by Ilbery et al, as scanned images which include text and images, would enhance the output and provide a clear grayscale image.

As to dependent claim 2, limitations of claim 1, and further comprising wherein the region of interest includes a plurality of neighboring pixels (Figs. 3-5).

As to dependent claim 3, limitations of claim 2, and further comprising wherein the neighboring pixels form a symmetrical pixel array surrounding said each of said pixels (Figs. 3-5).

As to dependent claim 4, limitations of claim 3, and further comprising wherein the symmetrical pixel array forms a square (Figs. 3-5).

As to dependent claim 5, limitations of claim 1, and further comprising using said second format for an output device (Fig. 1,); Tai et al disclose in Fig. 1 and col. 2, line 59-col. 3, line 16, where an image is scanned into the input scanner (10) and then is manipulated (12), and then rendered (16) for the output device (18).

As to dependent claim 6, limitations of claim 5, and further comprising wherein said output device is a printer (col. 3, lines 9-16).

Art Unit: 2675

As to dependent claim 7, limitations of claim 1, and further comprising determining a dynamic range of pixel values of pixels in an encompassing neighborhood of the region of interest, and wherein the step of halftoning includes making dynamic adjustments depending on the dynamic range of pixel values (Fig. 2, and col. 3, line 41-col. 5, line 4).

As to dependent claim 8, limitations of claim 7, and further comprising wherein the step of making dynamic adjustments includes producing a visually pleasing transition between text and picture area in said image (col. 6, lines 3-22).

As to dependent claim 9, see claim 1.

As to dependent claim 10, limitations of claim 9, and further comprising, where we determine a number of second value to be placed in said second format image based on a weighted function of the image intensity values within the region of interest of the first format image.

As to dependent claim 11, limitations of claim 9, and further comprising, wherein the plurality of regions of interest form the entire first format image.

As to dependent claim 12, limitations of claim 1, and further comprising, a computer usable medium having computer readable program code means embodied therein for causing a digital image to be transformed (col. 3, lines 1-5).

As to dependent claim 13, limitations of claim 1, and further comprising, a program storage device readable by machine, tangibly embodying a program of instructions executable by the machine to perform method steps for transforming a digitized image (col. 3, lines 1-5).

As to dependent claim 15, limitations of claim 14, and further comprising employing a third and fourth rule of halftoning; Tai et al does not state the third and fourth rules of

Art Unit: 2675

halftoning. Ilbery et al disclose these different rules in col. 18, lines 63-68, col. 19, lines 1-68, col. 20, lines 1-68, col. 21, lines 1-68. It would have been obvious to one of ordinary skill in the art to combine the systems of Tai et al with that of Ilbery et al as they both disclose a dither system. It is advantageous to use the halftoning system as shown by Ilbery et al, as scanned images which include text and images, would enhance the output and provide a clear grayscale image.

As to claims 16 and 17, see claims 12 and 13, above.

Response to Arguments

3. Applicant's arguments with respect to claims 1-17 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to **Srilakshmi K. Kumar** whose telephone number is **(703) 306 5575**.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Steven Saras, can be reached at (703) 305-9720.

Any response to this action should be mailed to:

Commissioner of Patents and Trademarks

Washington, D.C. 20231

or faxed to:

(703) 872-9314 (for Technology Center 2600 only)

Hand-delivered responses should be brought to Crystal Park II, 2121 Crystal Drive, Arlington, VA, Sixth Floor (Receptionist).

Art Unit: 2675

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Technology Center 2600 Customer Service Office whose telephone number is (703) 306-0377.

Srilakshmi K. Kumar
Examiner
Art Unit 2675

SKK
December 15, 2002



STEVEN SARAS
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2600